REMARKS

In accordance with the foregoing, claims 1, 10, 14, 19, 27 AND 35-39 have been amended and claims 53-61 have been newly added.

STATUS OF CLAIMS

Claims 7, 11, 20, 24 and 48-52 are allowed.

Claims 1, 2, 5, 6, 10, 13-15, 18, 19, 22, 23, 26-28, 31-39 and 41-47 are rejected.

Claims 3, 9, 16, 29 and 40 are objected to.

New claims 53-61 are presented.

Accordingly, claims 1-3, 4-7, 9-11, 13-16, 18-20, 22-24, 26-29 and 31-61 are pending and under consideration.

ITEM 3: REJECTION OF CLAIMS 1-2, 6, 10, 14-15, 19, 23, 27-28 and 34-39 AS BEING UNPATENTABLE OVER TSUBOYAMA ET AL. (USP 5,995,076) TAKEN WITH WILLIAMS ET AL. (USP 6,397,343) IN VIEW OF KAWATA (USP 6,076,171)

The Examiner rejected the claims 1-2, 6, 10, 14-15, 19, 23, 27-28 and 34-39 for obviousness under 35 U.S.C. 103 based on Tsuboyama (USP 5,995,076), Williams (USP 6,397,343) and Kawata (USP 6,076,171).

The rejections are respectfully traversed.

TSUBOYAMA et al. (USP 5,995,076)

Tuboyama discloses an LCD in which a write phase of a scan signal is shifted and a polarity of an information signal is reversed at every predetermined scan period, so that a frequency of applied waveforms at an image display portion and a background portion in the display is reduced respectively or is changed respectively. However, the purpose of this operation is to reduce crosstalk by making a frequency difference of the applied waveforms smaller - - and is not to reduce noise generated by the drive waveform of the panel.

Tsuboyama is cited in the Action at page, the last paragraph as teaching a display apparatus "using different types of display waveforms alternately (column 2, lines 46-67 and column 3, lines 1-25)."

The citation by the Action is in error and misleading. There is no teaching of using "different types of waveforms alternately" but rather:

> ...periodically switching between a first drive mode of using the first and second data signal for providing the ON-and OFF-states, respectively, of the pixels and a second drive mode of using the first and second data signals for providing the OFF-and ON-states, respectively, of the pixels.
>
> ***
>
> The first and second drive modes are switched between each other periodically or for each prescribed scanning period. As a result, the frequencies of drive voltage waveform for both a display picture region and a background region of a display panel (or display unit) may be lowered, and also the frequency difference therebetween may be decreased.

(Emphasis Added)

Accordingly, Tsuboyama employs the switching of first and second drive modes so as to permit lowering the frequency of a drive voltage wave form for both a display picture region and a background region of a display panel and also reducing frequency differences therebetween. These techniques have no bearing on the function disclosed and claimed in the present application, such as in claim 6: "wherein a peak noise output of a display panel is reduced by switching a clock signal among at least two frequencies sequentially...."

It is also apparent that the reduced frequency purportedly rendered possible for the driving signals in the reference is a function of the optical characteristics and response speed of a liquid crystal material used in the liquid crystal panel (column 6, lines 25-30). The claims of the reference moreover are restricted to liquid crystal devices and the sole functional purpose recited in claim 1 of the periodic switching is to provide the alternating functions of ON-and OFF-states in the first driving mode and OFF-and ON-states using the second drive mode. That technique has not bearing on the drive signals used in a plasma display panel, as disclosed and claimed in the present application.

WILLIAMS et al. (USP 6,397,343)

Williams discloses that a clock frequency is adjusted or changed in a computer graphic system depending on the load.

It is respectfully submitted that Williams et al. is irrelevant to and a teaching-away from that of the present invention. Further, the Action distorts the teaching of Williams et al.

At page 3 of the Action, beginning at line 6, Williams et al. is cited as teaching a system for "dynamic clock frequency adjustment for a graphic subsystem (column 3, lines 59-67 and column 4, lines 1-63...)." The Action however fails to acknowledge that the citation relied upon,

(column 3, lines 59-67) further teaches the frequency adjustment of Williams is for "adjusting the heat output of the graphic subsystems of a computer without reducing system capabilities of requiring periods of non-use." (Emphasis added). Column 3, lines 1-63 likewise explains the entire purpose of adjusting the clock frequency is to "control the heat and/or other associated output levels of a graphic subsystem" (Column 4, lines 26-28).

While reference is made to in Williams adjusting frequency to control "the noise output of the computer system," that is clearly unrelated to the noise in the display addressed by the present application - - for example, column 4, lines 38-39 refers to "the noise output of a computer system (e.g., from cooling fans or other cooling apparatus)".

Moreover, the adjustment of the clock frequency is "in response to heat generation" and is not a clock frequency adjustment of the type specified in the pending claims, e.g. as in claim 5: "wherein a peak noise output of the display panel is reduced by switching a clock signal among at least two frequencies sequentially...."

The Action also cites from column 15, lines 8-15 of Williams - - which is the preamble in the first paragraph in the body of claim 16 - - which merely relates to the step of "adjusting the clock frequency..." - - and altogether ignores the essential further claim recitations of "increasing the clock frequency when the load placed on the graphic subsystem exceeds a threshold...and decreasing the clock frequency when the load...does not exceed the threshold...such that the clock frequency is dynamically adjusted in response to the load placed on the graphic subsystem by software."

The entirety of the teachings of Williams et al. "teaches–away" from the present, claimed invention.

KAWATA (USP 6,076,171)

Kawata discloses that a clock frequency is adjusted within an appropriate range according to CPU capability in a computer system.

Kawata relates to controlling power consumption of an information processing apparatus, such as a portable computer, by varying the system clock frequency. (Column 1, lines 6-10).

This reference thus is irrelevant to the present invention which relates to a method of driving a plasma display panel.

The reference particularly addresses a purported solution to a problem in such apparatus, when the operating frequency is adjusted, of causes discomfort to a user. (See e.g. column 2, lines 7-31 and particularly at liens 10-11 and 26-27). There is absolutely no relationship between

this technology and driving a plasma display panel nor between varying power consumption levels by varying a system clock frequency versus suppressing noise outputs of a plasma display panel by varying a driving frequency, as taught by the present invention.

The Action makes a misleading citation to the reference, such as at page 3 the last four lines of the Office Action, by alluding to Kawata teaching "varying the system clock frequency" - - but altogether ignoring the conditions and purposes of such variations, which are altogether unrelated conditions and purposes of Kawata relatively to the present invention. Column 11, lines 12-16 cited in the next to last line on page 3 of the Action addresses a continuous variation occurring in one aspect of the operations of the Kawata circuit - - but ignores the fact of other conditions in which a continuous variation is not characteristic of the operating condition. As discussed above, Tsuboyama relates to an LCD that does not have the high level noise generated by the drive waveform applied to each electrode of a display panel such as PDP, and Williams and Kawata do not have a drive waveform applied to electrodes of a display panel such as a PDP. Further, no reference suggests the problem of noise generated from a drive waveform of PDP. Therefore, the present invention is not obvious.

The principal references relied upon in Item 3 of the Action are submitted to be irrelevant to the present invention since having no bearing on noise generation in a plasma display panel and the technique disclosed and claimed in the present application for overcoming that problems - - whether the references are taken singularly or in any proper combination.

LACK OF *PRIMA FACIE* DEMONSTRATION OF OBVIOUSNESS

The Action is altogether silent as to the monetary "demonstration," other then asserting the well worn and wholly inadequate contention that it would "have been obvious to a person of ordinary skill in the art..." to effect the combination of references advanced in support of the rejection of claims in the Action. There has been no showing of motivation for effecting the combination of any reference with another. Moreover, the Action ignores the unrelated fields of art from which the references are derived which would belie any contention that one of skill in the art, by referring to one reference would be led to modify the teachings of another of those of record herein. Compliance with the guidelines is altogether lacking: see, MPEP 706.02(j), 2143-03, and 2141-2144.09.

THE TERTIARY REFERENCES OF ITEM 4: TANAKA (USP 6,130,420); ITEM 5: NAKATA (USP 5,206,729); AND ITEM 6: COOPER (USP4,305,091)

These references were first cited in the Office Action mailed December 12, 2004. Tanaka was not asserted then, or now, as having any relevant teaching for reducing a noise

output of a display panel. Tanaka was then, and now is cited merely as teaching control of a clock during a "quiescent," period.

Nakata was cited in that same Action, in Item 7, as teaching a driving method for "reducing peak values of noise emitted by the display panel." Nakata is cited now in Item 5 of the present Action for that same teaching, along with "producing special video effects." The reference is irrelevant; it relates to "wiping away" an existing image with a new image in a display (column 1, lines 59-60) which is referred to "noise wipe switching" (column 1, lines 60-61). The new image appears as random noise within the existing image and small random like areas of the new image gradually increase in size until it fully replaces the existing image" (columns 1-2). Clearly, Nakata et al. is irrelevant to the noise reduction technique disclosed and claimed in the present application.

Cooper was relied upon, to supplement a deficient teaching of Kawakami, for teaching "reducing noise in an electronic signal" (Abstract, line 2). The reference relates to: Electronic Noise...a physical property which is at times most troublesome to electronic circuitry. ..." (Column 1, lines 9-10) - - and the reference explains that "unwanted noise 10 added or increased in a wanted electronic signal every time that signal passes through any resistance." Various elements known to be "noise producers" are discussed. Nowhere does the reference have any teaching related to plasma display panels or the unique problems of noise generated by such display panel and it has no bearing on the type of drive signals used in driving a plasma display panel which has this unique noise generation problem.

It is submitted that the tertiary references are unrelated to the subject matter of the pending claims.

That earlier Office Action, moreover, in pointing out the allowable subject matter of independent claim 6 and claims depending therefrom did not even address the tertiary references; instead it acknowledged that claim 6, as then pending, was allowable over the two principal references then were relied upon to Kawakami (USP 6,037,917) and Tanaka et al. (USP 6,130,420), because :

> [S]aid prior art of record does not teach a driving method for a plasma display apparatus having a display panel, wherein a peak noise output of the display panel is reduced by switching a clock signal, used to drive the display panel, between at least two frequencies in accordance with time conditions.

It is submitted that this same rational supports the patentability of the claims rejected in Items 4, 5 and 6 of the Office Action.

NEW CLAIMS 56-61

Claims 53-61, as newly presented herein, claim that a drive signal having a rectangular shape is applied to each electrode of a display panel so as to display with emission, and a peak noise output of the display panel is reduced by switching a clock signal among at least two frequencies sequentially, and by generating the drive signal from the switched clock signal - - and variations thereof. Accordingly, the present, claimed invention is not obvious (35 USC § 103) from the cited references.

In a PDP, each of the electrodes of the display panel is driven by a drive signal having a rectangular shape, such an applying drive signal generates a noise with a specific frequency. This is a unique issue, or problem, of a PDP. In order to reduce such noise, in the present invention, the frequency of a clock signal by which the drive waveform is generated is varied sequentially between at least two frequencies. The noise with a specific frequency can be reduced by switching a clock signal among at least two frequencies sequentially, wherein the drive signal is generated from the switched clock signal.

CONCLUSION

In accordance with the foregoing, it is respectfully submitted that all of the claims pending herein distinguish patentably over the rejections of record.

There being no further outstanding objections or rejections, it is submitted that the application is in condition for allowance. An early action to that effect is courteously solicited.

Finally, if there are any formal matters remaining after this response, the Examiner is requested to telephone the undersigned to attend to these matters.

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If there are any additional fees associated with filing of this Amendment, please charge the same to our Deposit Account No. 19-3935.

Respectfully submitted,

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